

U.S. Environmental Protection Agency
Region 7
Kansas City, Kansas



130

*West Lake Landfill
Superfund Site
Bridgeton, Missouri*

*Public Meeting
June 22, 2006*



Superfund Law & Regulations



- Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA)
- National Oil and Hazardous Substances Pollution Contingency Plan (NCP)

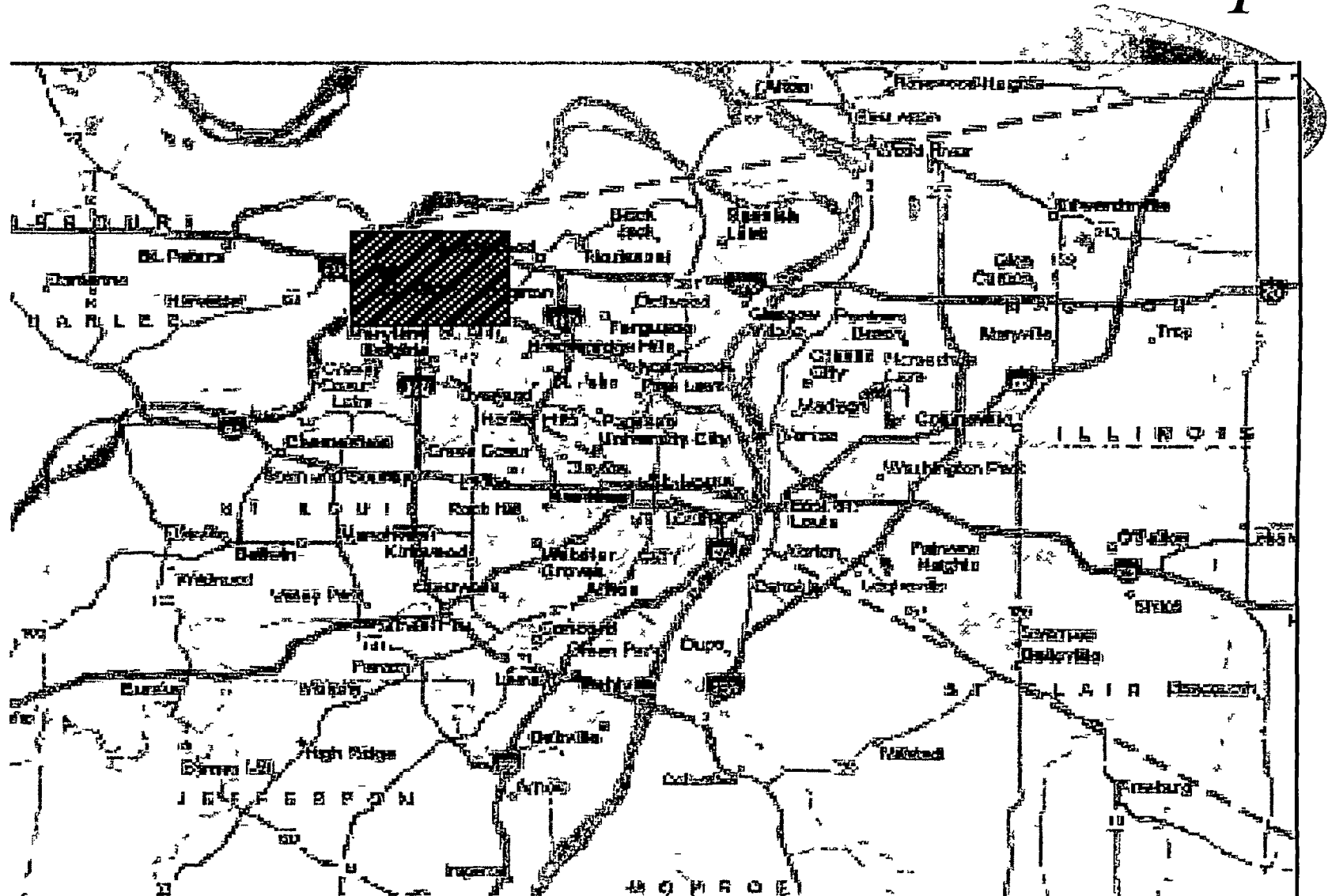
Superfund Process

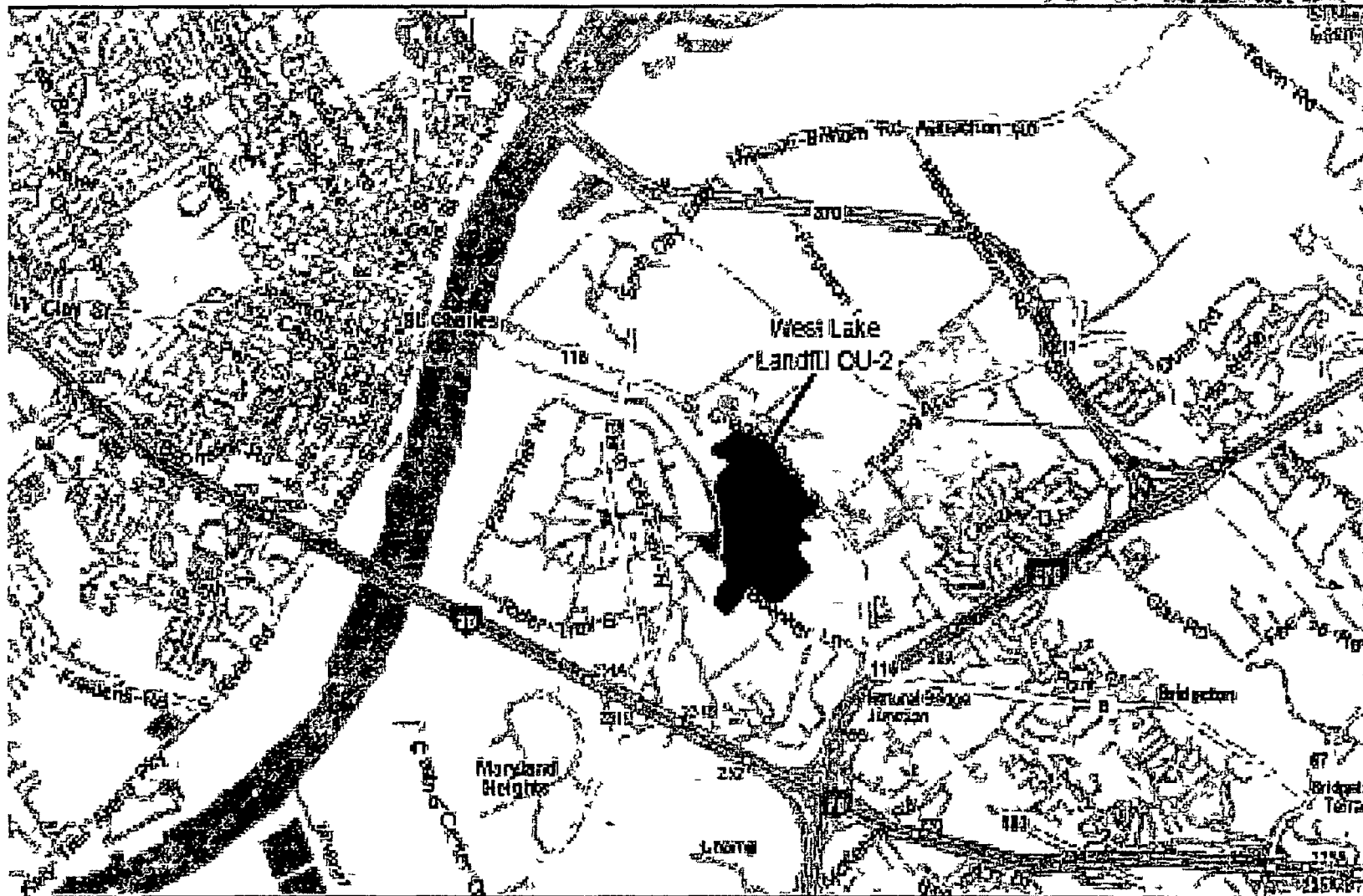
- Preliminary Assessment
- Site Investigation
- National Priorities List (NPL)
- Remedial Investigation (RI)
- Feasibility Study (FS)
- Preferred Alternative

Superfund Process (cont'd)

- Public Comment Period
- Responsiveness Summary
- Record of Decision (ROD)
- Remedial Design/Remedial Action (RD/RA)
- Long-Term Monitoring and Maintenance
- Periodic Reviews (5-Year Review)

Area Map





Site History



- 1939 - Limestone Quarry
- 1950s Landfill for municipal refuse, industrial solid waste and construction, demolition debris
- 1973 Radiologically contaminated soil

Site History (cont'd)



- 1974 Bridgeton Sanitary Landfill
permitted by MDNR
- 1990 Site placed on the Superfund
National Priorities List
- 1994 to Remedial Investigation and
present Feasibility Study (RI/FS)

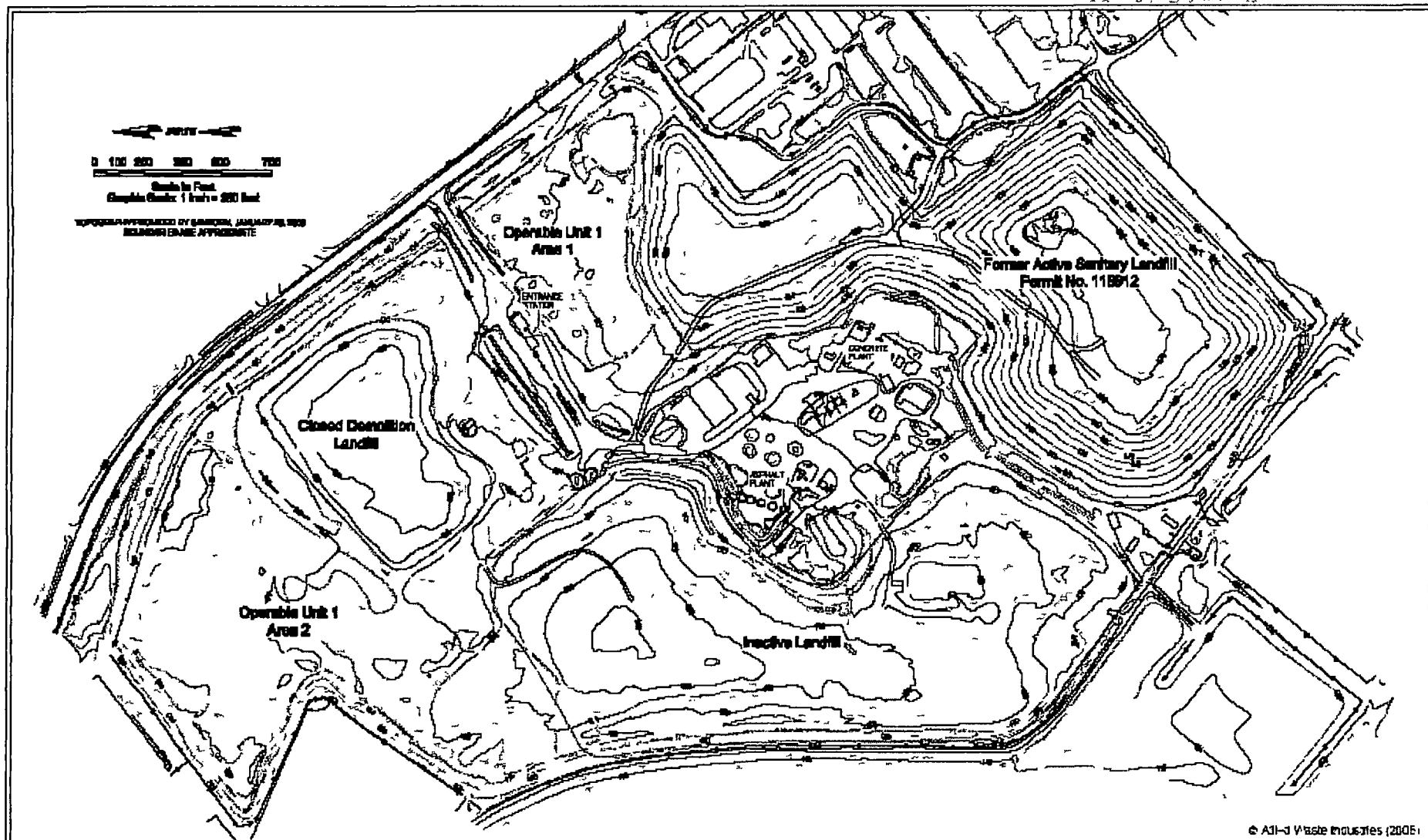
Site Areas – Operable Unit 1

- Radiological Area 1 and Area 2 – received municipal refuse, construction/demolition debris and radiologically contaminated soil. Operated pre-1974.
- Buffer Zone/Crossroad Property (Ford Property) – became radiologically contaminated from erosion event at Area 2.

Site Areas – Operable Unit 2

- Closed Demolition Landfill – operated under state permit and was closed in 1995.
- Former Active Sanitary Landfill – Bridgeton Landfill operated under state permit and ceased operation in 2005.
- Inactive Sanitary Landfill - received municipal refuse, construction/demolition debris pre-1974.

Site Boundaries



Permitted Areas

LEGEND



Permit No.	Type	Acres	Issue Date
118908	Dissection	20	10/1/79

*Used for existing waste disposed prior to issuance of Dissection Permit

218903	Dissection	20	10/1/79
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*Used for existing waste disposed prior to issuance of Dissection Permit

118908	Dissection	20	10/1/79
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*Operation of original permit area

118908	Dissection	20	10/1/79
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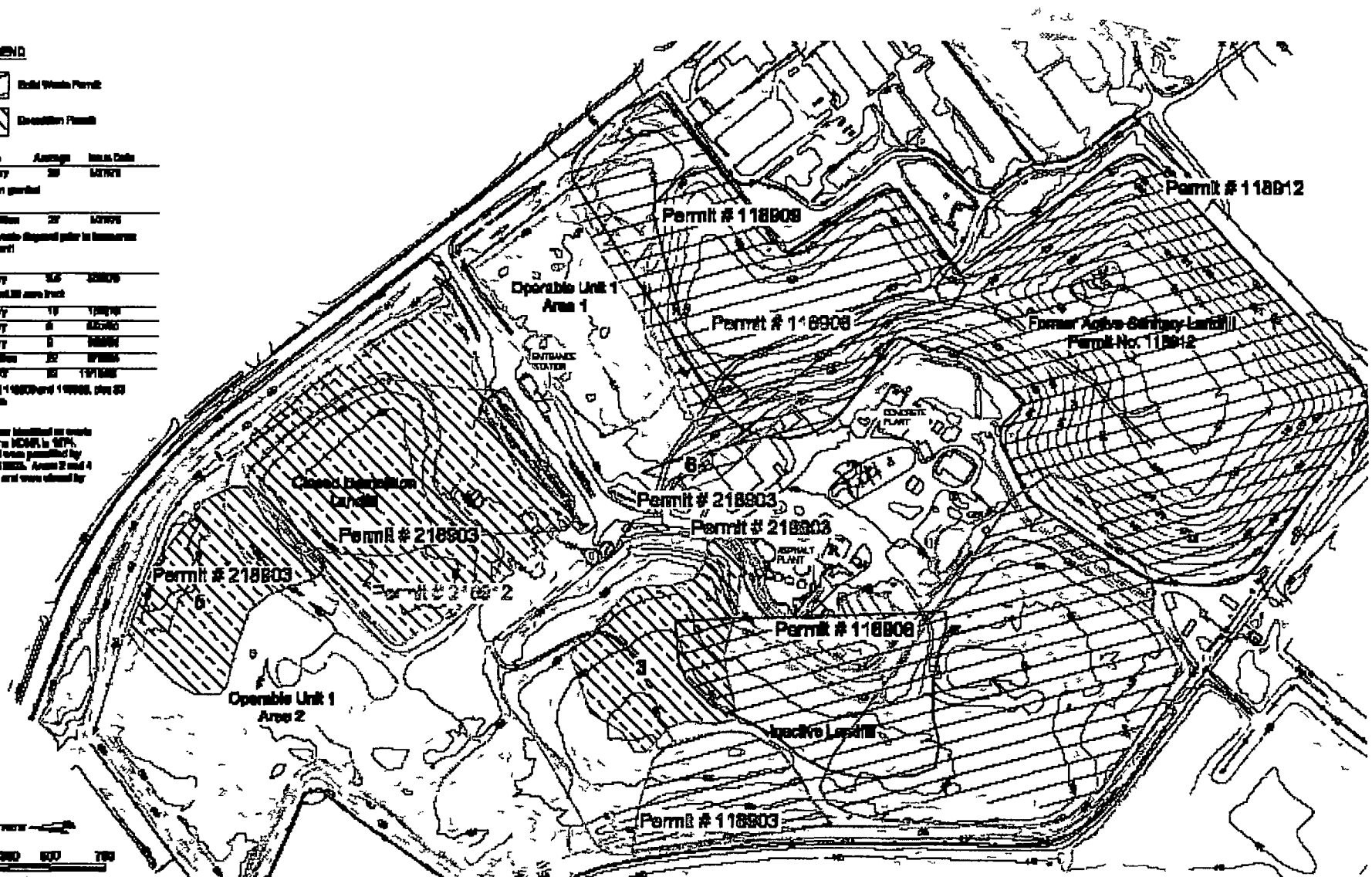
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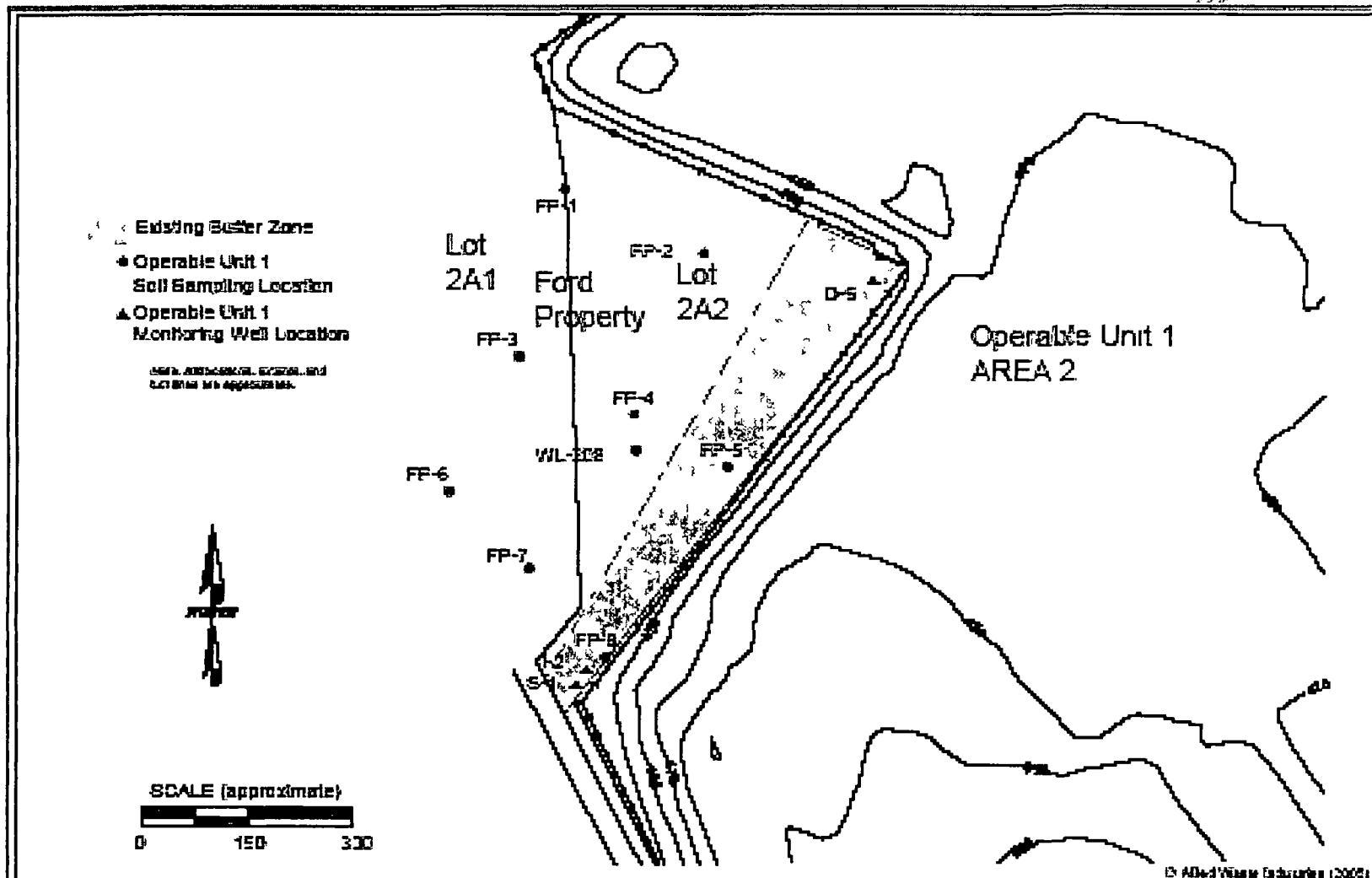
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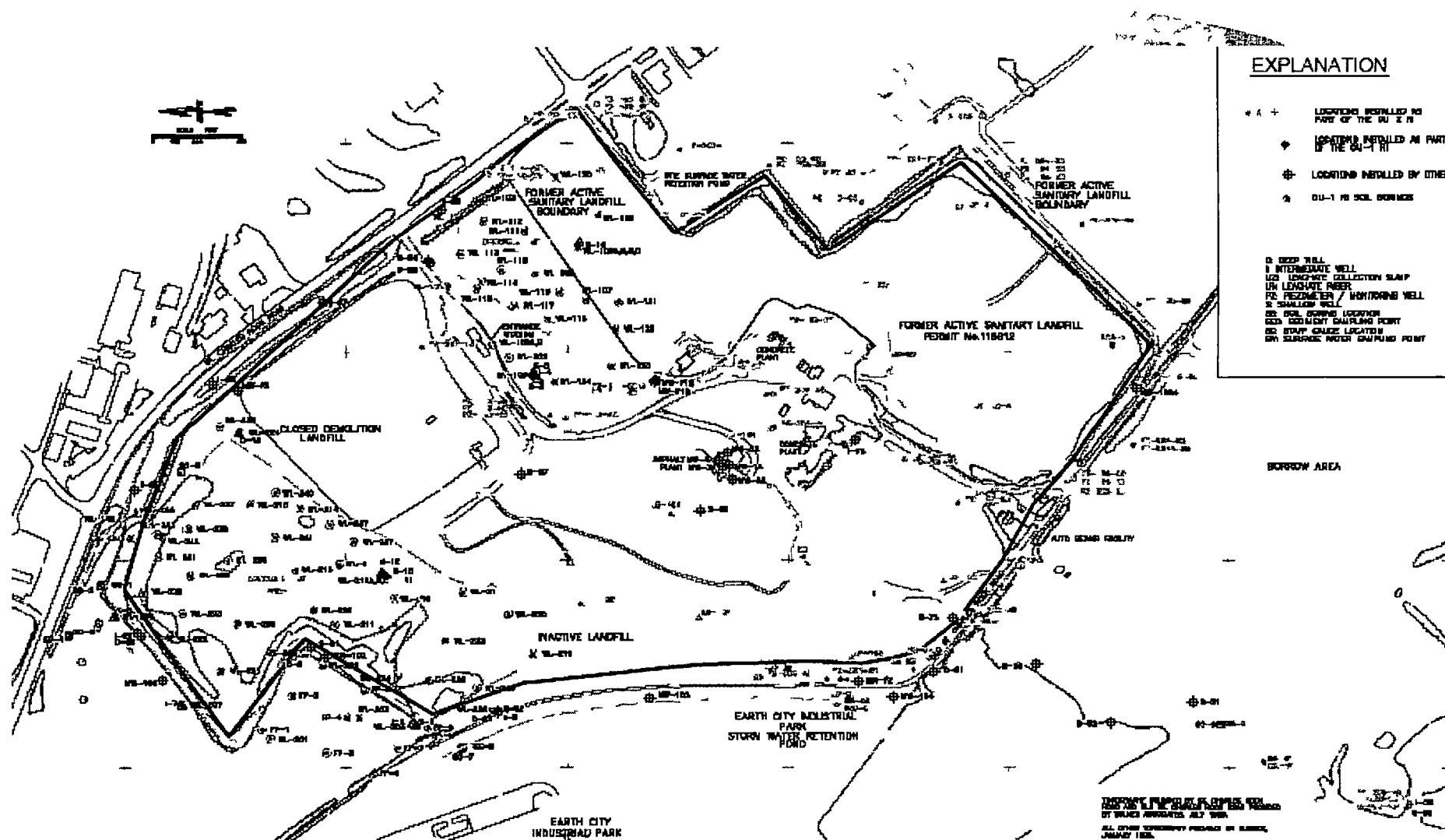
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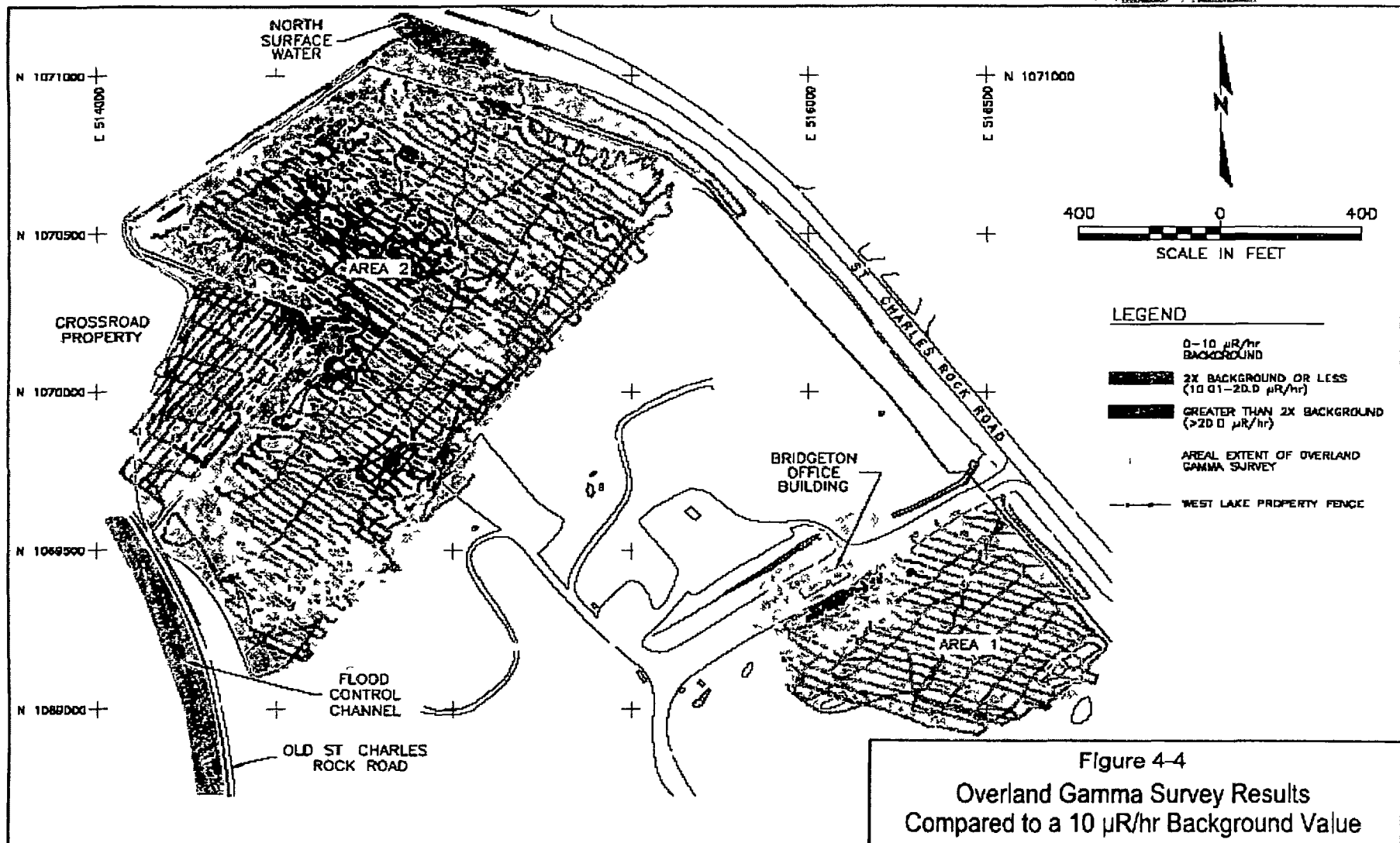


Ford Property Map

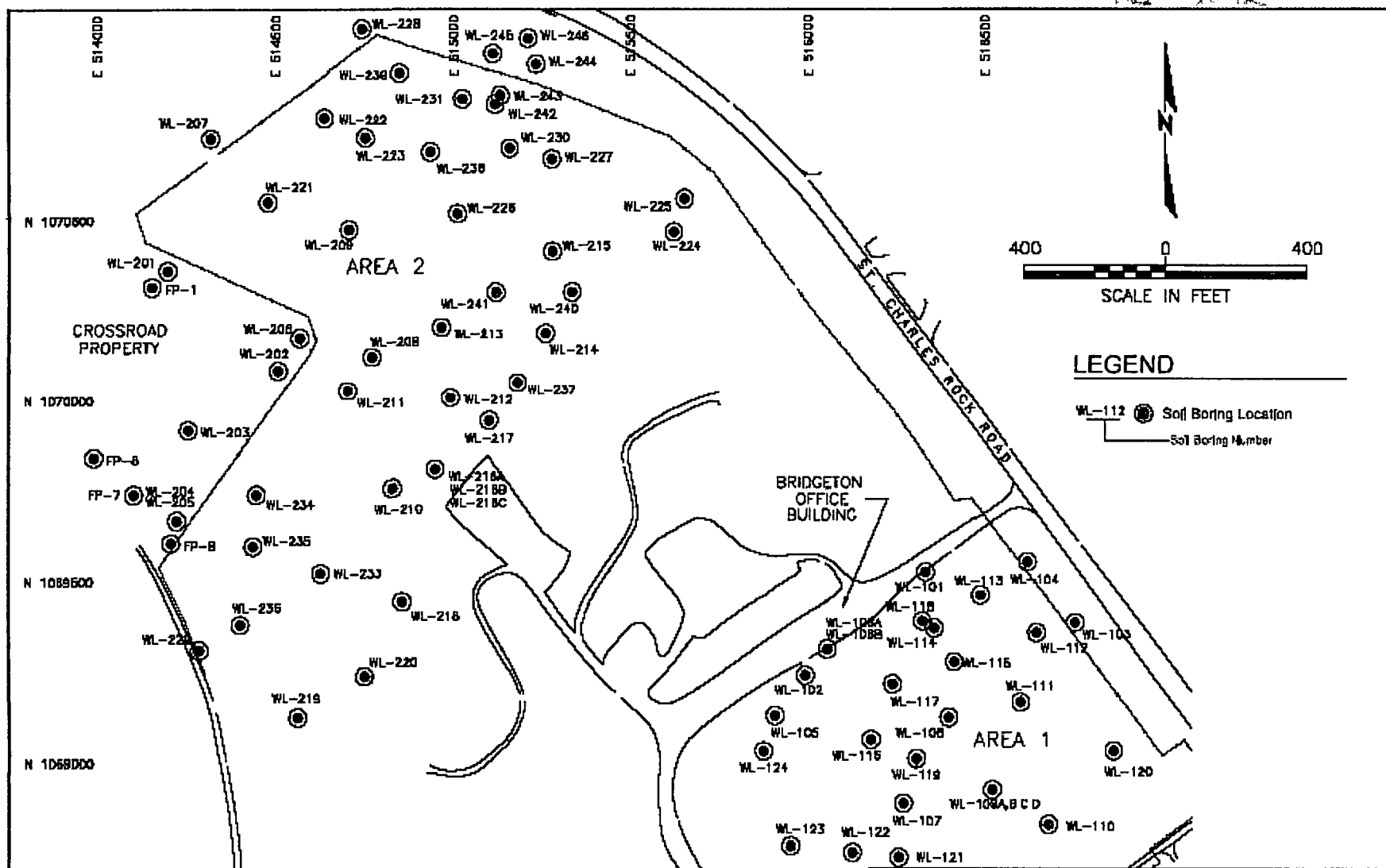




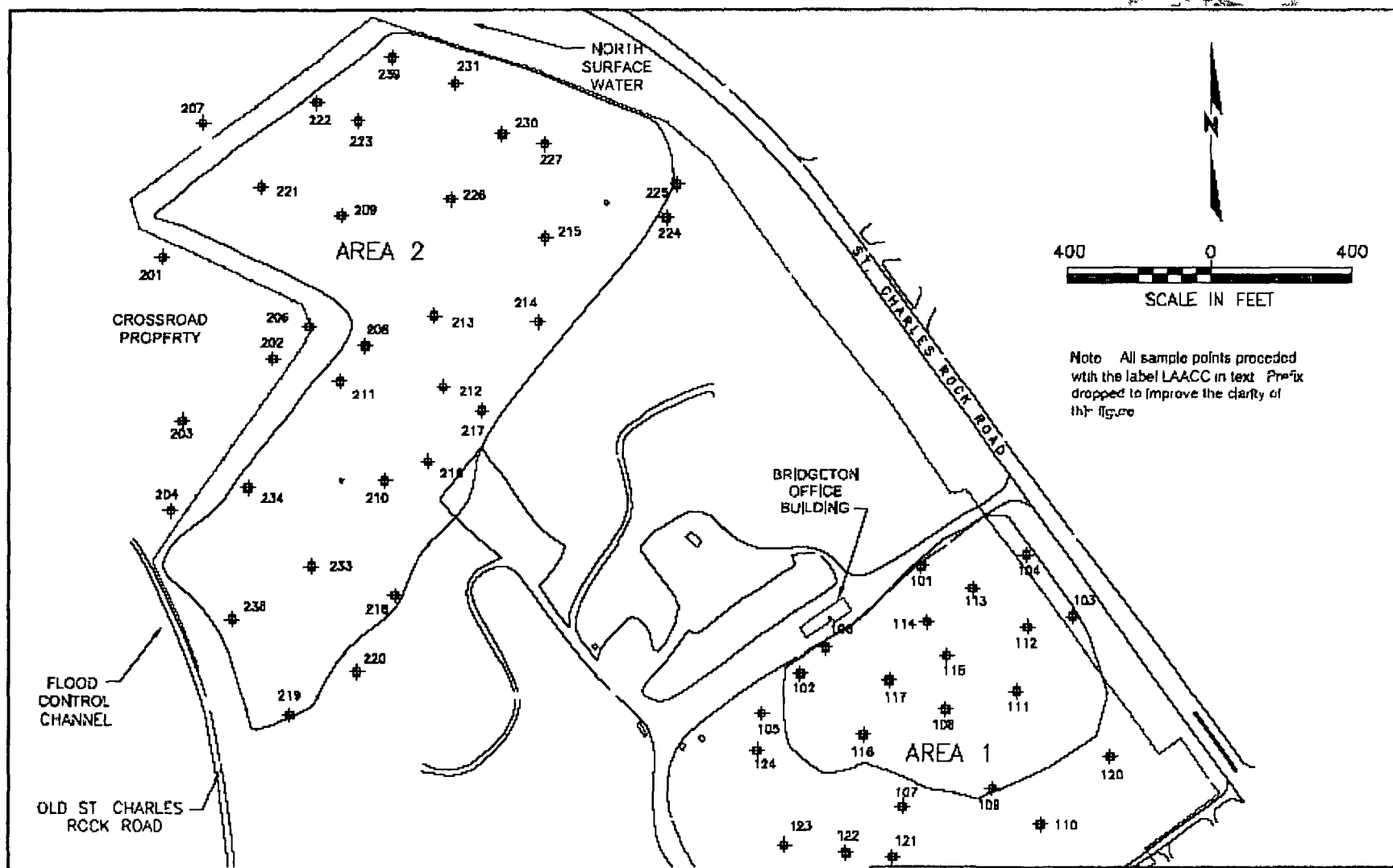
Overland Gamma Survey



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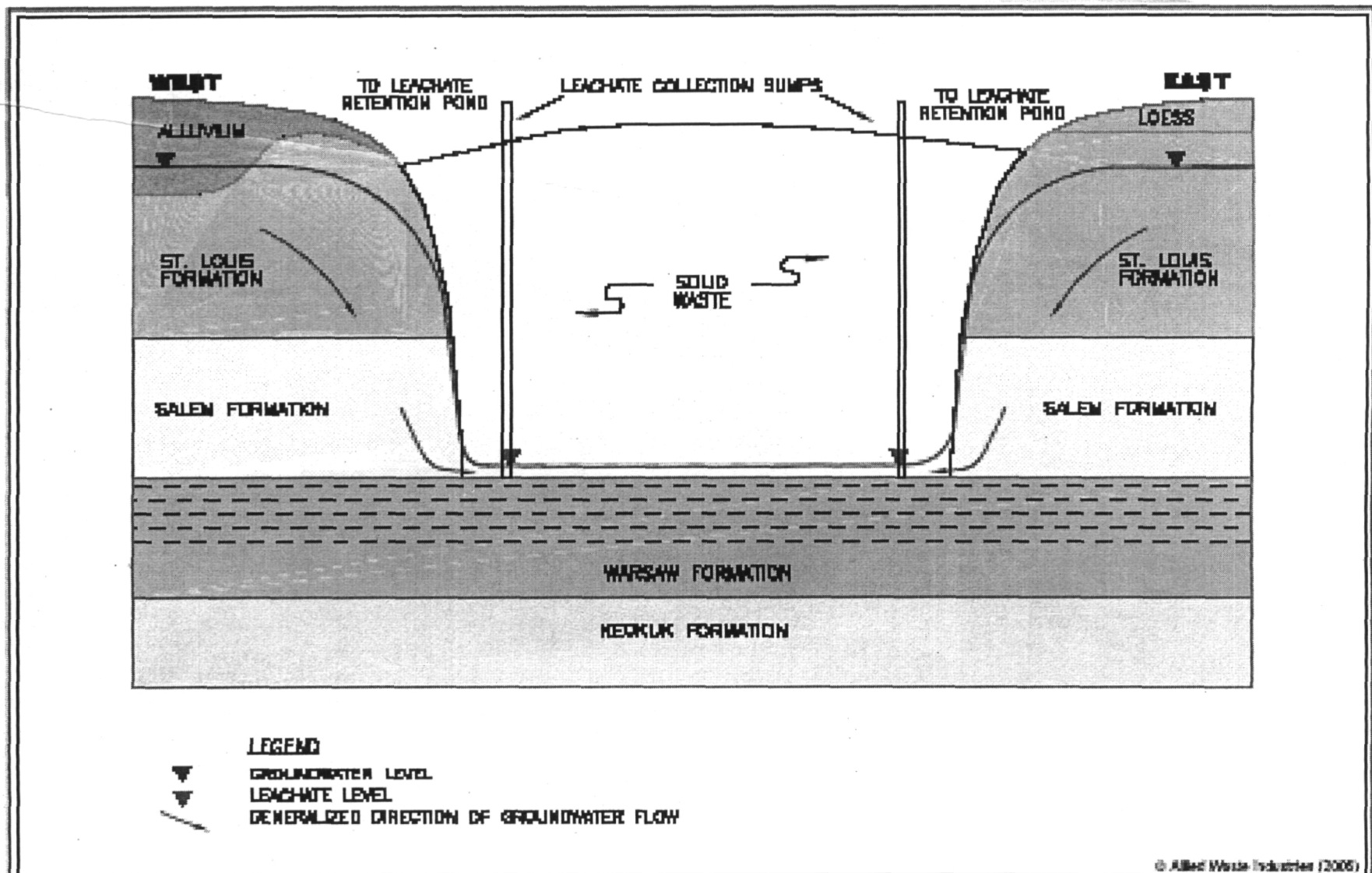
Radon Flux Measurement Locations



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Conceptual Hydrogeologic Model



Baseline Risk Assessment



- Evaluate range of current and potential future exposures assuming NO controls are in place:
 - Chemicals of concern
 - Exposure scenarios
 - Risk Calculation

Feasibility Study Process



- Identify Remedial Action Objectives
- Identify Technologies
- Develop Remedial Alternatives
- Evaluate and Compare Alternatives
 - Nine Evaluation Criteria

Remedial Action Objectives for OU-1 Radiological Areas 1 and 2

- Prevent direct contact with landfill contents, including exposure to radiation (gamma, radon);
- Minimize infiltration and resulting contaminant leaching to groundwater;
- Control surface water run-off and erosion; and
- Control and treat landfill gas emissions, including radon.

Remedial Action Objectives for OU-2 Landfill Areas

- Prevent direct contact with landfill contents;
- Minimize infiltration and resulting contaminant leaching to groundwater;
- Control surface water run-off and erosion;
and
- Control and treat landfill gas emissions.

Remedial Technologies



- Landfill cap;
- Landfill gas collection and treatment;
- Long-term monitoring and maintenance;
and
- Institutional controls to limit land and
resource use.

OU-1 Remedial Alternatives

Radiological Areas 1 & 2

- Alternative L1 – No Action
 - Capital cost: \$0
 - Annual cost: \$0
 - Present worth cost: \$47,000

Required by the NCP as a baseline for comparison.

OU-1 Remedial Alternatives (cont'd)

- Alternative L2 – Cover repair and maintenance, institutional controls, and monitoring
 - Capital cost: \$890,000
 - Annual O&M cost: \$240,000 to \$260,000
 - Present worth cost: \$3,900,000

Improve and maintain current site conditions.

OU-1 Remedial Alternatives (cont'd)

- Alternative L3 – Soil cover to address gamma exposure and erosion potential
 - Capital cost: \$8,400,000
 - Annual O&M cost: \$20,000 to \$200,000
 - Present worth cost: \$9,800,000

Place 30-inch soil cover to reduce gamma exposure to workers

OU-1 Remedial Alternatives (cont'd)

- Alternative L4 – Installation of solid waste landfill cover (minimum slope 2%)
 - Capital cost: \$21,800,000
 - Annual O&M cost: \$15,000 to \$200,000
 - Present worth cost: \$23,100,000

Fully engineered cover meeting the Missouri requirements for landfills, including concrete rubble layer to increase longevity.

OU-1 Remedial Alternatives (cont'd)

- Alternative L5 – Installation of solid waste landfill cover (minimum slope 5%)
 - Capital cost: \$24,600,000
 - Annual O&M cost: \$15,000 to \$200,000
 - Present worth cost: \$25,800,000

Fully engineered cover meeting the Missouri requirements for landfills, including concrete rubble layer to increase longevity.

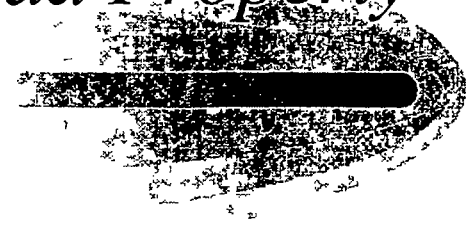
OU-1 Remedial Alternatives (cont'd)

- Alternative L6 – Excavation of radiologically contaminated material and installation of solid waste landfill cover
 - Capital cost. \$75,000,000
 - Annual O&M cost \$15,000 to \$200,000
 - Present worth cost. \$76,000,000

Excavation and remote commercial disposal of a portion of the more radiologically contaminated waste material in combination with the landfill cover

OU-1 Remedial Alternatives

Buffer Zone/Crossroad Property



- Alternative F1 – No Action
- Alternative F2 – Institutional and Access Controls
- Alternative F3 - Capping and Institutional and Access Controls
- Alternative F4 – Soil Excavation and Consolidation at Area 2

OU-2 Remedial Alternatives

- Closed Demolition Landfill and Former Active Sanitary Landfill
 - State permits provide the requirements for closure and post-closure care consistent with the RAOs.

OU-2 Remedial Alternatives (cont'd)

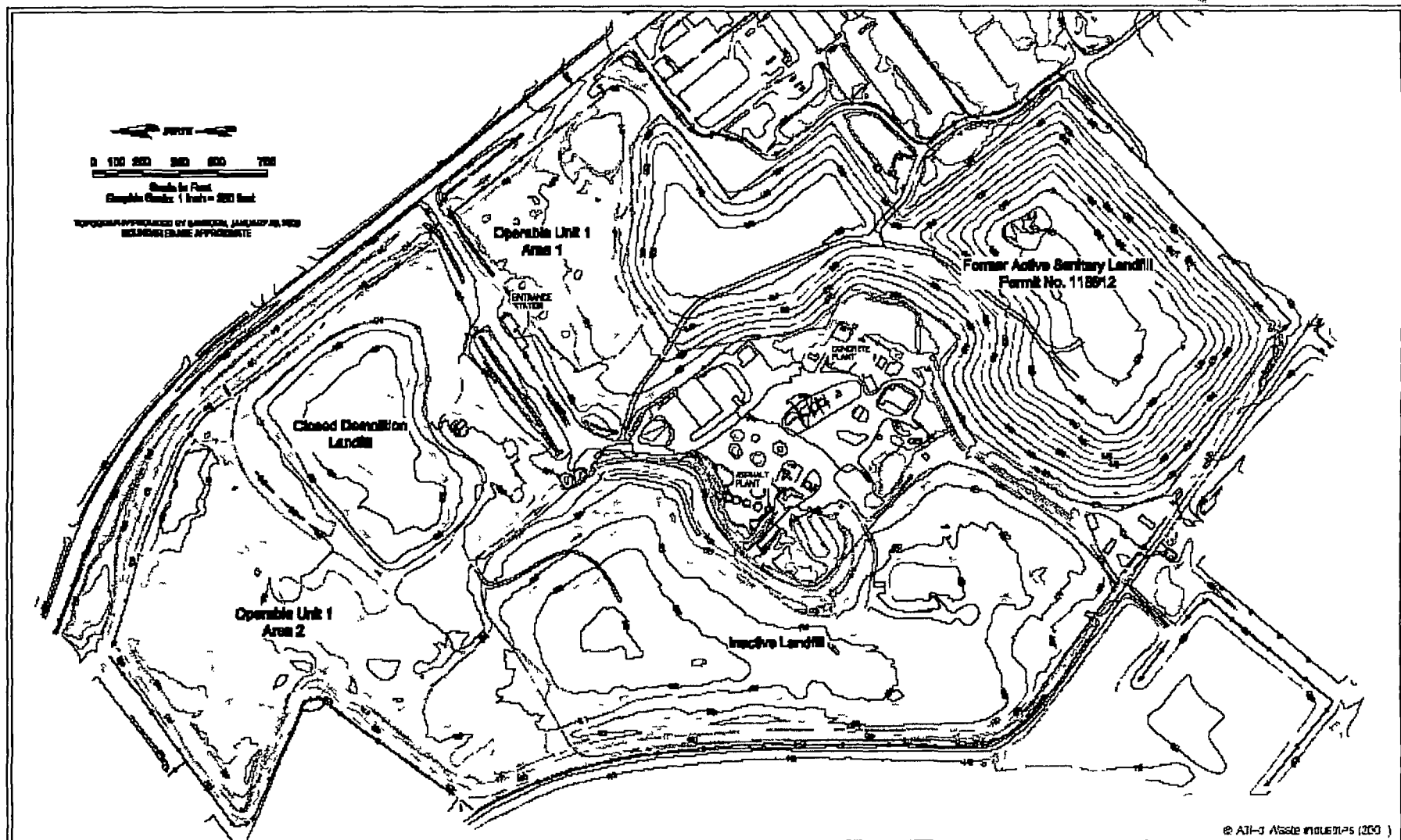


Inactive Sanitary Landfill:

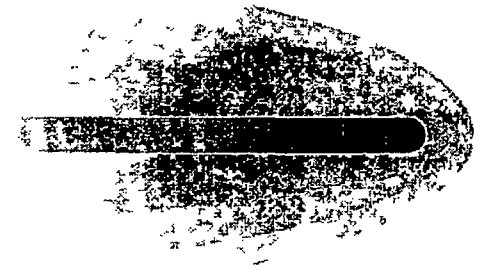
- Landfill Cover with Long-Term Monitoring and Institutional Controls
 - Capital Cost: \$6,670,000
 - Annual O&M Cost. \$45,000
 - Present Worth Cost \$7,215,000

Install landfill cap consistent with Missouri requirements for sanitary landfills

Site Boundaries



Evaluation Criteria



Threshold Criteria:

- Overall protection of human health and the environment
- Compliance with State and Federal Laws (ARARs)

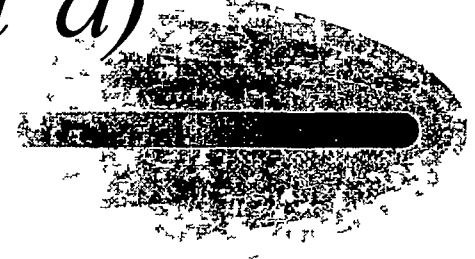
Evaluation Criteria (cont'd)



Primary Balancing Criteria:

- Long-term effectiveness;
- Reduce toxicity, mobility or volume through treatment;
- Short-term effectiveness;
- Implementability; and
- Cost

Evaluation Criteria (cont'd)



Modifying Criteria:

- State acceptance
- Community acceptance

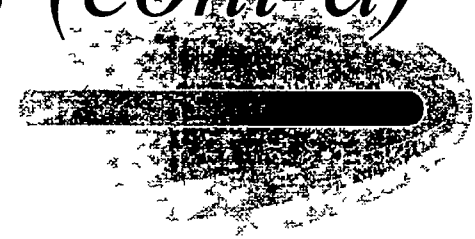
Comparative Analysis



Alternative L6 – Excavation of radiologically contaminated material and installation of solid waste landfill cover:

- Construction is difficult and dangerous;
- Potential exposures to workers and the public are increased;
- Wastes must be disposed of in another landfill;

Comparative Analysis (cont'd)



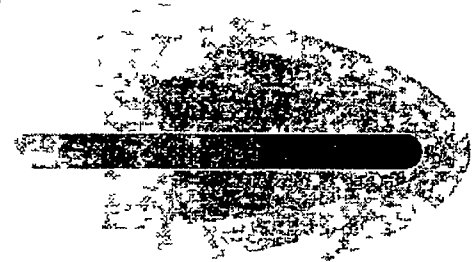
- Transportation presents implementation and safety concerns (4,250 truckloads and 1,120 rail cars);
- The site remains a landfill that must be monitored and maintained;
- Not cost-effective.

Comparative Analysis (cont'd)

Installation of solid waste landfill cover:

- Waste can be safely managed in place;
- Better short-term effectiveness;
- Straightforward construction;
- Cost effective;
- Consistent with Superfund program expectations.

EPA's Preferred Alternative for OU-1

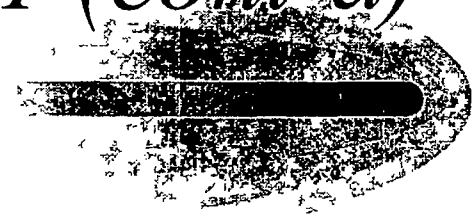


Radiological Areas 1 & 2

- Install landfill cover incorporating concrete rubble layer consistent with Alternative L4;
- Gas monitoring and control, including decomposition gas and radon gas;
- Storm water run-off controls;
- Long-term groundwater monitoring; and
- Institutional controls to limit land and resource use.

5 yr Review
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*EPA's Preferred Alternative
for OU-1 (cont'd)*



Buffer Zone/Crossroad Property

- Consolidate radiologically contaminated soil at Radiological Area 2 in the landfill
 - All soils outside the landfill would meet levels supporting unrestricted use.

EPA's Preferred Alternative for OU-1 (cont'd)



Cover Design

- Would meet Missouri solid waste requirements;
- Would meet radon emission standards for uranium mill tailing sites (40 CFR 192)
- Barrier to infiltration;
- Barrier to intrusion;
- Barrier to radon emissions and gamma exposure;

EPA's Preferred Alternative for OU-1 (cont'd)

Gas monitoring and assessment

- Would meet Missouri solid waste requirements;
- Lateral migration of radon and/or decomposition gas would be controlled

*EPA's Preferred Alternative
for OU-1 (cont'd)*



Long-term groundwater monitoring

- Would meet Missouri solid waste requirements;
- Would meet groundwater protection standards for uranium mill tailing sites (40 CFR 192)

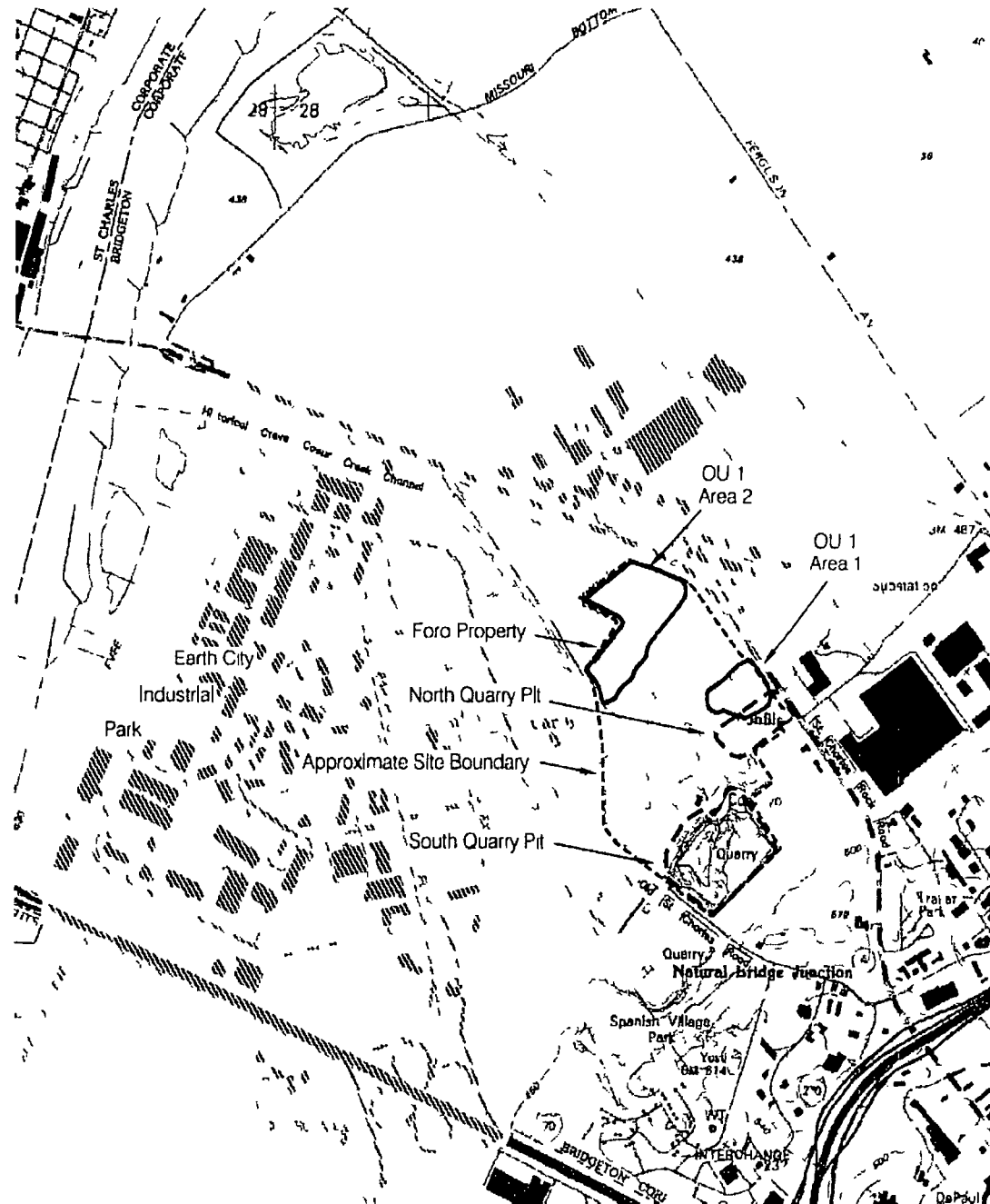
EPA's Preferred Alternative OU-2



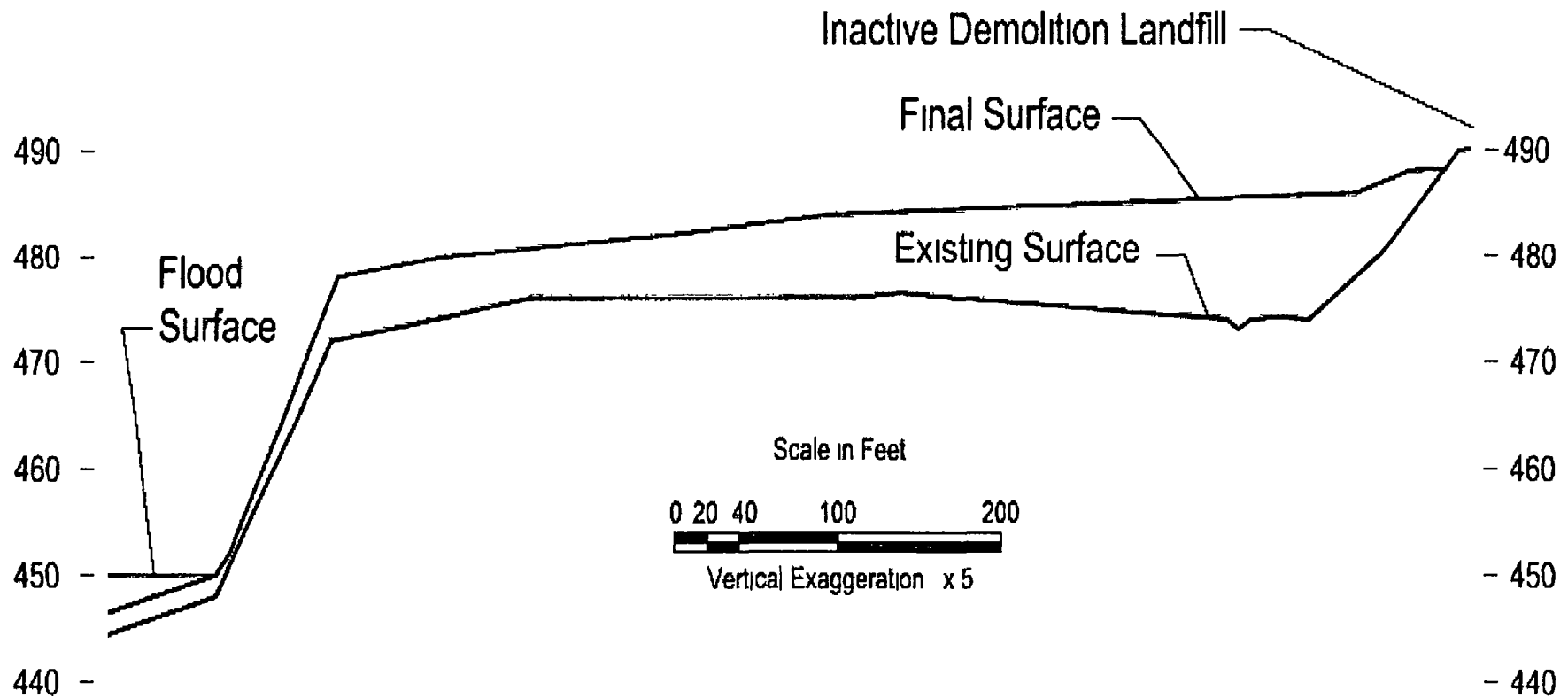
Inactive Sanitary Landfill

- Install landfill cover;
- Gas monitoring and control;
- Storm water run-off controls;
- Long-term groundwater monitoring; and
- Institutional controls to limit land and resource use.

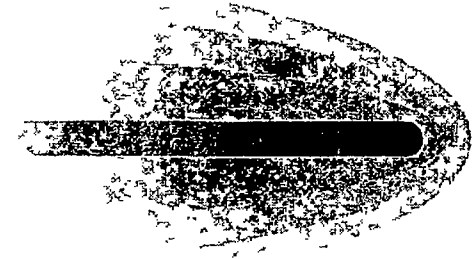
Flood Zone Map



Approximate flood elevation assuming failure of the local levees



Public Comment Period



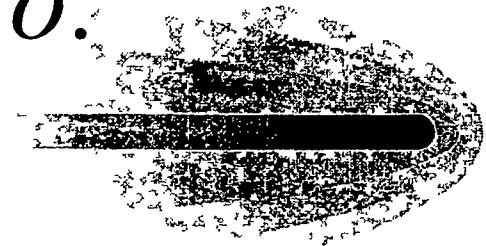
- Comment period –
June 14, 2006 to July 14, 2006
- Responsiveness Summary
- Record of Decision (ROD)

Administrative Record File



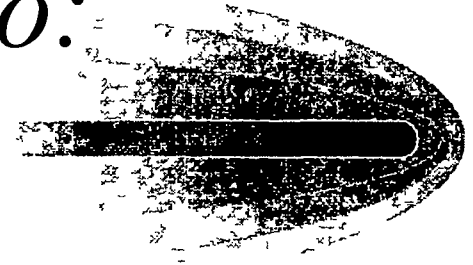
Bridgeton Trails Branch
St. Louis County Library
3455 McKelvey Rd.
Bridgeton, MO 63044
(314) 291-7570

Send Comments To:



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Send Comments To:



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U.S. Environmental Protection Agency
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Kansas City, Kansas

